No. 9000143

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Land O' Lakes, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT TY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT T. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'L2333'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D.C. *this* 31st *day of* December *in the year of our Lord one thousand nine hundred and* ninety-one.

Attest:

Kenneth A. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Edward Madigan
Secretary of Agriculture

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
Land O'Lakes, Inc.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.
84-1253

3. VARIETY NAME
L2333

4. ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*
RR #2
Webster City, Iowa 50595

5. PHONE *(Include area code)*
515-543-4852

FOR OFFICIAL USE ONLY

PVPO NUMBER
9000143

FILING
Date: Apr 12, 1990
Time: ☐ A.M. ☐ P.M.

FEES RECEIVED
Filing and Examination Fee: $ 2150.—
Date: Feb. 26, 1990
Certificate Fee: $ 250.—
Date: Dec. 16, 1991

6. GENUS AND SPECIES NAME
Glycine max

7. FAMILY NAME *(Botanical)*
Leguminosae

8. CROP KIND NAME *(Common Name)*
Soybean

9. DATE OF DETERMINATION
Dec 88

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
Minn.

12. DATE OF INCORPORATION
July 8, 1921

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Drew Ivers
RR 2
Webster City, IA 50595

PHONE *(Include area code)*:

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*

a. [X] Exhibit A, Origin and Breeding History of the Variety.
b. [X] Exhibit B, Novelty Statement.
c. [X] Exhibit C, Objective Description of Variety.
d. [ ] Exhibit D, Additional Description of Variety.
e. [X] Exhibit E, Statement of the Basis of Applicant's Ownership.
f. [X] Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office 2-90.
g. [X] Filing and Examination Fee ($2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See section 83(a) of the Plant Variety Protection Act.)*
☐ YES *(If "YES," answer items 16 and 17 below)* ☒ NO *(If "NO," skip to item 18 below)*

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☒ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES *(If "YES," through* ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____ .)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☒ YES (If "YES," give names of countries and dates) U.S. sold as L2333
☐ NO (Not sold abroad as of now Feb 90)

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE
D Ivers	Breeder	20 Feb 90
SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE

EXHIBIT A

Origin and Breeding History of the Variety:

1. L2333 is an F_5 derived single plant selection from the cross: MAX X L4404 (Both PVP varieties)

2. MAX was crossed to L4404 in July 1979 in our crossing block at our research station. F_2 seed was produced in the greenhouse in the winter of 79-80 and F_3 seed harvested the fall of 1980. F_4 and F_5 seed was produced in Taiwan the winter of 80-81, and F_5 single plants grown at our research farm in 1981 & again in 1983. L2333 was selected as an F_5 derived plant-row by the single-seed-descent breeding method in 1984 and tested from 1985 thru 1988. Breeder's Seed was produced in 1987 and Foundation seed produced in 1988 at the LOL Research Farm. Certified seed was produced in 1989 in Iowa.

JJH 17 Dec. 1991

~~3. L2333 may have up to 0.1% mechanical mixtures of unpredictable identity.~~

4. L2333 reached genetic stability at the F_5 generation, and is homozygous, homogeneous, and void of variants to the best of our knowledge.

EXHIBIT B 9000143

Novelty Statement

L2333 is most similar to the variety Corsoy 79 in that it has a similar maturity and growth habit:

Both are adapted to southern Minnesota and northern Iowa. Both mature about the same time. Both respond to management similarily.

L2333 differs from Corsoy 79 by maturity:

L2333 Relative Maturity = 23
Corsoy 79 Relative Maturity = 21

L2333 is 2.7 days later than Corsoy 79 as documented by 84 reps of data from 28 environments over 4 years in the table attached.

L2333 differs from Corsoy 79 by having a brown vs. yellow hilum, and tawny vs. gray pubescence.

L2333 also differs from Corsoy 79 for lodging and plant height. However, since the statistical documentation has not been provided, we are not declaring these two characters on this PVP application.

EXHIBIT C
(Soybean)

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (Glycine max L.)

NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME
Land O'Lakes, Inc.	84-1253	L2333

ADDRESS *(Street and No., or R.F.D. No., City, State, and Zip Code)*

RR 2
Webster City, Iowa 50595

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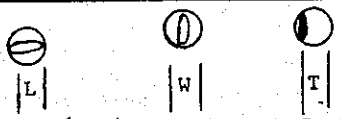
PVPO NUMBER

9000143

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g., [0][9]).

1. SEED SHAPE:

[4]



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

2. SEED COAT COLOR: (Mature Seed)

[1] 1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other *(Specify)* _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

[2] 1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

4. SEED SIZE: (Mature Seed)

[1][7] Grams per 100 seeds

5. HILUM COLOR: (Mature Seed)

[3] 1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other *(Specify)* _____

6. COTYLEDON COLOR: (Mature Seed)

[1] 1 = Yellow 2 = Green

7. SEED PROTEIN PEROXIDASE ACTIVITY:

[ ] 1 = Low 2 = High

8. SEED PROTEIN ELECTROPHORETIC BAND:

[ ] 1 = Type A ($SP1^a$) 2 = Type B ($SP1^b$)

9. HYPOCOTYL COLOR:

[4] 1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

10. LEAFLET SHAPE:

[3] 1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other *(Specify)* _____

11. LEAFLET SIZE:

[2] 1 = Small ('Amsoy 71'; 'A5312') 2 = Medium ('Corsoy 79'; 'Gasoy 17')
3 = Large ('Crawford'; 'Tracy')

12. LEAF COLOR:

[3] 1 = Light Green ('Weber'; 'York') 2 = Medium Green ('Corsoy 79'; 'Braxton')
3 = Dark Green ('Gnome'; 'Tracy')

13. FLOWER COLOR:

[2] 1 = White 2 = Purple 3 = White with purple throat

14. POD COLOR:

[1] 1 = Tan 2 = Brown 3 = Black

15. PLANT PUBESCENCE COLOR:

[2] 1 = Gray 2 = Brown (Tawny)

16. PLANT TYPES:

[2] 1 = Slender ('Essex'; 'Amsoy 71') 2 = Intermediate ('Amcor'; 'Braxton')
3 = Bushy ('Gnome'; 'Govan')

17. PLANT HABIT:

[3] 1 = Determinate ('Gnome'; 'Braxton') 2 = Semi-Determinate ('Will')
3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

18. MATURITY GROUP:

[0][5] 1 = 000 2 = 00 3 = 0 4 = I 5 = II 6 = III 7 = IV 8 = V
9 = VI 10 = VII 11 = VIII 12 = IX 13 = X

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

[0] Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)

[0] Bacterial Blight (*Pseudomonas glycinea*)

[0] Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

[0] Brown Spot (*Septoria glycines*)

Frogeye Leaf Spot (*Cercospora sojina*)

[0] Race 1 [ ] Race 2 [ ] Race 3 [ ] Race 4 [ ] Race 5 [ ] Other (*Specify*) _____

[0] Target Spot (*Corynespora cassiicola*)

[0] Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)

[0] Powdery Mildew (*Microsphaera diffusa*)

[1] Brown Stem Rot (*Cephalosporium gregatum*)

[0] Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

[0] Pod and Stem Blight *(Diaporthe phaseolorum* var; *sojae)*

[0] Purple Seed Stain *(Cercospora kikuchii)*

[0] Rhizoctonia Root Rot *(Rhizoctonia solani)*

Phytophthora Rot *(Phytophthora megasperma* var. *sojae)*

[1] Race 1 [1] Race 2 [1] Race 3 [1] Race 4 [1] Race 5 [1] Race 6 [1] Race 7

[1] Race 8 [1] Race 9 [1] Other *(Specify)* _____

VIRAL DISEASES:

[0] Bud Blight (Tobacco Ringspot Virus)

[0] Yellow Mosaic (Bean Yellow Mosaic Virus)

[0] Cowpea Mosaic (Cowpea Chlorotic Virus)

[0] Pod Mottle (Bean Pod Mottle Virus)

[0] Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode *(Heterodera glycines)*

[1] Race 1 [ ] Race 2 [ ] Race 3 [ ] Race 4 [ ] Other *(Specify)* _____

[1] Lance Nematode *(Hoplolaimus Colombus)*

[1] Southern Root Knot Nematode *(Meloidogyne incognita)*

[1] Northern Root Knot Nematode *(Meloidogyne Hapla)*

[1] Peanut Root Knot Nematode *(Meloidogyne arenaria)*

[1] Reniform Nematode *(Rotylenchulus reniformis)*

[0] OTHER DISEASE NOT ON FORM *(Specify):* _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

[2] Iron Chlorosis on Calcareous Soil

[0] Other *(Specify)* _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

[0] Mexican Bean Beetle *(Epilachna varivestis)*

[0] Potato Leaf Hopper *(Empoasca fabae)*

[0] Other *(Specify)* _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	L4404	Seed Coat Luster	MAX
Leaf Shape	"	Seed Size	"
Leaf Color	"	Seed Shape	"
Leaf Size	"	Seedling Pigmentation	"

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/ POD
				CM Width	CM Length	% Protein	% Oil		
L2333 Submitted	123	2.3	91	7.5	10.5	36.47	17.31	16.9	3
Corsoy 79 Name of Similar Variety	121	2.7	107	7.1	10.3	35.37	17.95	16.0	3

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A_2 in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

TABLE L2333 4 YEAR AVERAGE

ENTRY	MAT. DATE	YIELD BU/A MEAN	1989	1988	1987	1986	LDG SCR	HT IN	CHL SCR	PRR FLD	PRR 134	PRR GH
L2333	23.3	42.1	46.5	31.9	44.3	45.6	2.3	36	2.5	1.9	SSS	96
ELGIN	22.6	41.2	45.2	32.4	44.1	42.0	2.3	36	4.1	2.9	SSS	86
NKS23-03	20.9	40.3	43.0	31.4	44.2	42.6	2.5	39	2.8	2.4	SSS	79
HARDIN	17.9	38.7	44.6	29.2	39.0	41.2	2.7	40	4.0	3.1	RSS	53
L2456	23.9	38.4	40.9	30.1	40.6	42.7	2.7	40	3.9	1.4	RRR	114
CORSOY 79	20.6	38.1	41.7	29.6	40.6	40.2	2.7	42	4.2	2.5	RRS	70

TEST		ELIIE	ELIIE	ELIIE	ELIIE	
MEAN		42.6	29.7	40.5	41.9	(Sioux Falls, Worthington,
C.V.%		7.6	12.4	5.7	7.0	A.Lea, Wayne, Cherokee, F.D.
L.S.D		1.7	2.2	1.4	2.1	Waverly, Janesville, Bancroft)
# REPS	84	27	21	21	15	

89BOOK.TBL

EXHIBIT E

Statement of Ownership

L2333 is exclusively owned by Land O'Lakes, Inc. in lieu of the fact that the variety was developed exclusively by the LOL Soybean Breeding Project #8222 stationed at the LOL Answer Farm, RR #2, Webster City, Iowa 50595.

L2333 was developed from a cross of MAX X L4404 made by Dr. Drew Ivers (LOL Research Geneticist) and under his direction and at LOL expense advanced to and tested as a variety. This variety will be sold by LOL to its farmer-member-owners and the general public with full sales release in 1991.